Narrow-13 and Searches for Gravitational Radiation with Spacecraft Doppler Tracking

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ABSTRACT

We discuss a filtering technique for reducing the frequency fluctuations Of noise sources localized in space (like the troposphere, or the master clock) that affect the sensitivity of spacecraft Doppler tracking searches fox gravitational radiation. This method takes advantage of the sinusoidal behavior of the transfer function to the Doppler observable of these noise sources, which display sharp nulls at selected Fourier components.

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[1] M. Tinto, *Phys. Rev.* D, 53, 5354, (1996)

[2] M. Tinto and John W. Armstrong, *Phys. Rev. D.* In preparation.

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The non-zero gravitational wave signal remaining at these frequencies makes this Doppler tracking technique the equivalent of a series of narrow-band detectors of gravitational radiation*, distributed across the low-frequency band. Estimates for the sensitivities achievable with the future Cassini Doppler tracking experiments are presented in the contest of broad-band gravitational wave bursts, monochromatic signals, and a stochastic background of gravitational radiation[2].

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